

Dynamic Capabilities: A Review of Past Research and an Agenda for the Future

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The dynamic capabilities view, by addressing the question of how firms can cope with changing environments, has gained increasing attention in the management literature in recent years, not only in the concept's original domain (strategic management) but also in many other areas within business administration. However, such remarkable growth has been associated with a proliferation of definitions of the focal construct as well as the emergence of a complex and disconnected body of research. In addition, the approach has also received some recurring criticisms. In this study, the author reviews the diverse research streams on dynamic capabilities, identifies main limitations and challenges, suggests a new conceptualization of dynamic capability as an aggregate multidimensional construct, and provides guidance about promising avenues for future research.

Keywords: *dynamic capabilities, performance, environmental change, resource-based view, evolutionary economics*

The dynamic capabilities view (Teece, Pisano, & Shuen, 1997) has attracted increasing attention within the management literature in recent years. Such an interest has resulted to a large extent from the longstanding importance given to the link between firms' strategic choices and environmental conditions in the strategy and organization theory literatures (Thompson, 1967). Failure to address major environmental changes can negatively affect

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firms' performance (Audia, Locke, & Smith, 2000), and current economies seem to present more challenges than ever to efficient and effective management because of what some scholars have termed *hypercompetitive environments* (D'Aveni, 1994) or what others have designated as *high-velocity environments* (Bourgeois & Eisenhardt, 1988), which tend to be associated with the increasingly frequent occurrence of major, discrete environmental shifts in competitive, technological, social, and regulatory domains. Recent research shows that the average period for which firms are able to sustain competitive advantage has decreased over time (Wiggins & Ruefli, 2005), suggesting that in hypercompetitive or high-velocity environments firms find it harder to achieve long-term competitive advantage. This situation implies that firms should be managed in such a way that they can build successive temporary advantages by effectively responding to successive environmental shocks (D'Aveni, 1994; Eisenhardt & Martin, 2000). How can firms successfully address such a challenging task? The "dynamic capabilities" approach provides one important response to this crucial question for both managers and researchers. Since Teece et al.'s (1997) landmark article, the dynamic capabilities view has generated an impressive flow of research. According to the ABI/INFORM database, at least 1,534 articles used the dynamic capabilities concept from 1997 to 2007, encompassing not only its original field, strategic management, but also most of the main areas in business administration.

Three main factors motivated this review, critique, and synthesis of the research streams on dynamic capabilities. First, the growing literature on this topic has provided successive and distinct definitions of the construct (e.g., Døving & Gooderham, 2008; Eisenhardt & Martin, 2000; Helfat et al., 2007; Teece, 2007; Teece et al., 1997; Winter, 2003; Zahra, Sapienza, & Davidsson, 2006; Zollo & Winter, 2002). Such a proliferation of definitions shows the dynamism generated by the topic and is justified by the youth of the approach, but it also produces some confusion that may hinder more effective progress within the field. So a consolidation of the concept of dynamic capabilities seems required before further research steps are taken in the field to ensure that proper assumptions, variables, and relationships are considered.

Second, the rapid growth of the dynamic capabilities literature as well as its diversity have led to a rich but complex, and somewhat disconnected, body of research pointing in disparate directions. For instance, some researchers have used firm performance as the relevant outcome, whereas others have explored processes or organizational outcomes instead. Some works have conceptualized dynamic capabilities as idiosyncratic factors, whereas others have accepted them also as commonalities across firms. Some articles have focused their attention on the existence of the dynamic capabilities, whereas others have attempted to uncover the development and maintenance of such capabilities. And some researchers have suggested dynamic capabilities as related to rapidly changing environments, whereas others have also considered more stable external contexts. Accordingly, the field needs a review and critique from which relevant guidance for future research can be offered not only regarding the main construct but also in terms of relationships, boundary conditions, and contingencies.

Third, despite the substantial body of work that has examined dynamic capabilities, the approach has been subject to some important criticism. For instance, Williamson (1999) argued that the concept of dynamic capabilities is tautologically linked to success and that fundamental constructs are not properly operationalized, whereas Winter (2003) attributed some mystery and confusion around the concept to its excessive connection to generic

formulas for universal effectiveness. Kraatz and Zajac (2001: 653) stated that “while the concept of dynamic capabilities is appealing, it is a rather vague and elusive one which has thus far proven largely resistant to observation and measurement.” Newbert (2007) found a low level of support for a limited subset of empirical tests employing the dynamic capabilities approach. Thus, the field would benefit from an enlarged overview of the research produced so far to assess whether and to what extent such recurring criticisms are justifiable and, more importantly, which specific procedures should be followed in future research.

In consequence, this article aims to provide a review of the key conceptual and empirical articles on dynamic capabilities published in leading management journals as well as a critical assessment of these research efforts (including main challenges and limitations) and a corresponding body of suggestions for future research.

Review of Dynamic Capabilities Research

Although some previous references to the concept can be found in the literature, it is after the publication of Teece et al.’s (1997) seminal article that the dynamic capabilities view generated a growing flow of research. Afterward, an impressive and varied body of research referring to the dynamic capabilities concept was published, as suggested by distinct measures. First, the general attention dedicated by scholars to the concept is quite significant. Using the ABI/INFORM database, I searched for scholarly work that mentioned dynamic capabilities anywhere in the document text, from 1997 to 2007. A remarkable number of studies referred to dynamic capabilities during this period (reaching a total of 1,534 articles), and the data further indicate an increasing trend over time. Second, the number of articles considering dynamic capabilities as a key element of the focal study (rather than just referring to it somewhere in the text) has also been important and growing. Third, the dynamic capabilities view has also attracted substantial attention from scholars publishing in top-tier management journals. From 1997 to 2007, I found a total of 40 articles published in leading management journals (*Academy of Management Journal*, *Academy of Management Review*, *Administrative Science Quarterly*, *Journal of Management*, *Journal of Management Studies*, *Management Science*, *Organization Science*, and *Strategic Management Journal*) that have mentioned “dynamic capabilities” in their title and/or their abstract. Fourth, despite the particular link of the concept to the field of strategic management because of its nature and origins, research based on dynamic capabilities is far from being confined to this domain. In fact, this view has also been used in research specialized in most main areas in business administration, namely, in marketing (e.g., Menguc & Auh, 2006), human resources management (e.g., Thompson, 2007), operations management (e.g., Fixson, 2005), international management (e.g., Uhlenbruck, 2004), information management (e.g., Sambamurthy, Bharadwaj, & Grover, 2003), and entrepreneurship (e.g., Arthurs & Busenitz, 2006).

Research to date has provided a large array of distinct conceptualizations of dynamic capabilities. Teece et al. (1997) offered what is perhaps the most influential study on this topic. They proposed the dynamic capabilities approach as an extension of the resource-based view (RBV) of the firm (Barney, 1986, 1991). The RBV intends to explain the conditions under which firms may achieve a sustained competitive advantage based on their bundles of resources and capabilities. Resources are “stocks of available factors that are owned or controlled by the firm,” whereas capabilities “refer to a firm’s capacity to deploy

Resources, usually in combination, using organizational processes, to effect a desired end” (Amit & Schoemaker, 1993: 35). The RBV assumes that resources and capabilities are heterogeneously distributed across firms and that such heterogeneity may persist over time. Firms’ bundles of resources and capabilities provide a competitive advantage as long as they are valuable and rare, and for such advantage to be sustainable over time, they must also be costly to imitate and nonsubstitutable (Barney, 1991). However, the RBV is considered to be essentially static in its nature and inadequate to explain firms’ competitive advantage in changing environments (e.g., Priem & Butler, 2001). As a result, Teece and colleagues proposed the dynamic capabilities framework to fill that gap. Although they had previously attempted to introduce the concept of dynamic capabilities (Teece & Pisano, 1994), it was their 1997 article that drew remarkable attention within the management literature to the new concept.

Teece et al. (1997: 516) defined dynamic capabilities as “the firm’s ability to integrate, build, and reconfigure internal and external competences to address rapidly changing environments.” Their approach was built around several main elements that highlight its major theoretical underpinnings (nature, role, context, creation and development, outcome, and heterogeneity). First, they categorized the nature of the concept as being an “ability” (or “capacity”), stressing the essential role of strategic management. So they extended RBV by suggesting a special kind of capability. Second, they specified the desired end (i.e., the role) of this special capability as being to integrate (or coordinate), build, and reconfigure internal and external competences. Herein, they assumed an evolutionary economics perspective (Nelson & Winter, 1982) by enunciating the role of routines, path dependencies, and organizational learning. Third, they focused on a particular type of external context, namely, rapidly changing environments. This was a natural consequence of their view of dynamic capabilities as an extension of the RBV toward regimes of rapid change, for which they undertook a more entrepreneurial perspective (Schumpeter, 1934). Fourth, they assumed that dynamic capabilities are typically built rather than bought and that their creation and their evolution are embedded in organizational processes that are shaped by firms’ asset positions and the evolutionary paths they have adopted in the past. Such an assumption is consistent with the evolutionary economics perspective. Fifth, they emphasized that, similar to resources and capabilities considered within RBV, dynamic capabilities are heterogeneous across firms because they rest on firm-specific paths, unique asset positions, and distinctive processes. Finally, their approach explicitly stated sustained competitive advantage (or success vs. failure, or value creation) as a direct outcome of dynamic capabilities. Again, this was consistent with the aim of supplementing RBV in a particular type of context while still retaining its purpose, that is, to explain how some firms and not others achieve and sustain a competitive advantage.

Several alternative conceptualizations of dynamic capabilities were subsequently offered. Some of them followed an approach closer to RBV, whereas others tended to undertake an approach more akin to evolutionary economics. Overall, these proposals vary significantly in terms of the nature, specific role, relevant context, creation and evolution mechanisms, types of outcomes, heterogeneity assumptions, and purposes of dynamic capabilities. Next, I present a brief overview of the main alternative conceptualizations (see Table 1 for the main definitions).

Table 1
Main Definitions of Dynamic Capabilities

Study	Definition
Teece & Pisano (1994)	The subset of the competences and capabilities that allow the firm to create new products and processes and respond to changing market circumstances
Teece, Pisano, & Shuen (1997)	The firm's ability to integrate, build, and reconfigure internal and external competences to address rapidly changing environments
Eisenhardt & Martin (2000)	The firm's processes that use resources—specifically the processes to integrate, reconfigure, gain, and release resources—to match and even create market change; dynamic capabilities thus are the organizational and strategic routines by which firms achieve new resource configurations as markets emerge, collide, split, evolve, and die
Teece (2000)	The ability to sense and then seize opportunities quickly and proficiently
Zollo & Winter (2002)	A dynamic capability is a learned and stable pattern of collective activity through which the organization systematically generates and modifies its operating routines in pursuit of improved effectiveness
Winter (2003)	Those (capabilities) that operate to extend, modify, or create ordinary capabilities
Zahra, Sapienza, & Davidsson (2006)	The abilities to reconfigure a firm's resources and routines in the manner envisioned and deemed appropriate by its principal decision maker(s)
Helfat et al. (2007)	The capacity of an organization to purposefully create, extend, or modify its resource base
Teece (2007)	Dynamic capabilities can be disaggregated into the capacity (a) to sense and shape opportunities and threats, (b) to seize opportunities, and (c) to maintain competitiveness through enhancing, combining, protecting, and, when necessary, reconfiguring the business enterprise's intangible and tangible assets

Nature

Dynamic capabilities have been defined as abilities (or capacities) but also as processes or routines. Following Teece et al. (1997), some authors have considered dynamic capabilities to be an ability or capacity (e.g., Helfat et al., 2007; Teece, 2000, 2007; Winter, 2003; Zahra et al., 2006). In their original proposal, Teece et al. justified the word *capabilities* to stress the key role of strategic management. In Helfat et al.'s (2007: 4) definition, the use of the term *capacity* was intended to refer not only to “the ability to perform a task in at least a minimally acceptable manner” but also to its repeatability (to distinguish it from a onetime change). Eisenhardt and Martin (2000) presented dynamic capabilities as specific and identifiable processes, whereas Zollo and Winter (2002) conceived dynamic capabilities as learned and stable patterns of collective activity, closely following an early definition of routines as “regular and predictable behavioral patterns” inside the firm (Nelson & Winter, 1982: 14).

Furthermore, Eisenhardt and Martin suggested that the nature of effective dynamic capabilities varies according to market dynamics, from detailed, analytical routines essentially relying on existing knowledge to simple, experiential routines mostly relying on situation-specific, new knowledge.

Specific Role

The literature has tended to consider the central role of dynamic capabilities as related to the change of key internal components of the firm, although the chosen locus of change has varied across elements such as resources and capabilities (e.g., Eisenhardt & Martin, 2000; Helfat et al., 2007; Teece et al., 1997; Winter, 2003), operating routines (Zollo & Winter, 2002), and resources and routines (Zahra et al., 2006). Thus, some studies referred to the concept as a capacity (Helfat et al., 2007) or as the routines (Eisenhardt & Martin, 2000) by which an organization alters its resource base. Some researchers opted for a two-level hierarchy, that is, discriminating between “zero-level” capabilities and “higher-level” capabilities. In that vein, “zero-level” capabilities correspond to “ordinary” capabilities, that is, those that allow a firm to “make a living” in the short term (Winter, 2003), or to “substantive capabilities,” that is, those used to solve a problem (Zahra et al., 2006). Dynamic capabilities, in contrast, are “higher-level” capabilities that operate to change ordinary capabilities (Winter, 2003) or substantive capabilities (Zahra et al., 2006). Similarly, Zollo and Winter (2002) distinguished two types of routines: those employed in the operational activity of the firm (the “operating routines”) and those dedicated to the modification of operating routines (the “dynamic capabilities”).

Although in a more indirect way, Makadok (2001) also undertook this approach by distinguishing two rent-creating abilities, those related to resource picking, which he associated with the RBV, and those related to capability building, which he associated with the dynamic capability framework. More recently, two studies have added additional components to what are elsewhere considered to be the constituents of dynamic capabilities. Schreyögg and Kliesch-Eberl (2007) proposed the consideration of “capability monitoring,” a separate organizational function removed from the operational level and intended to observe both a firm’s capabilities usage and evolvment and the firm’s external environment. Teece (2007) suggested that, in addition to the resource reconfiguring capability, two other “classes” of capabilities should be considered: the capability to sense and shape opportunities and threats and the capability to seize opportunities.

Relevant Context

There is important variation in the literature regarding the kind of external environments that are relevant for dynamic capabilities. Researchers within the field are divided among those who unequivocally ascribe the concept to highly dynamic environments, those who accept different degrees of environmental dynamism, those who acknowledge its relevance in both stable and dynamic environments, and those who simply ignore the characteristics of the specific environment. The required link between the existence of dynamic capabilities

and the presence of rapidly changing environments is quite clear from Teece et al.'s (1997) early proposal. Teece (2007) refined such a link by advocating the special relevance of the concept for environments that are open to international commerce, where technical change is systemic, where the global markets for goods and services are well developed, where markets for technological and managerial knowledge are poorly developed, and when regulatory or institutional shocks occur.

In a somewhat different tone, Eisenhardt and Martin (2000: 1110) argued that dynamic capabilities are important not only in high-velocity markets but also in "moderately dynamic" markets, that is, those where "change occurs frequently, but along predictable and linear paths." Moreover, they predicted different dynamic capabilities depending on whether firms reside in high-velocity or moderately dynamic markets. In contrast, Zahra et al. (2006: 922) contended that "a volatile or changing environment is not a necessary component of a dynamic capability," and Zollo and Winter (2002) corroborated this view by assuming that dynamic capabilities exist and are used even in environments characterized by lower rates of change. Nevertheless, Zahra et al. and Zollo and Winter conceded that dynamic capabilities may be of more value in rapidly changing environments. Finally, some other conceptualizations of dynamic capabilities do not explicitly acknowledge external environmental conditions, implicitly assuming the irrelevance of such conditions for their arguments (e.g., Makadok, 2001).

Creation and Development Mechanisms

Some mechanisms that guide the genesis and evolution of dynamic capabilities have already been proposed. Following an evolutionary economics perspective, the main emphasis has been directed toward learning mechanisms. Eisenhardt and Martin (2000) suggested that the main mechanisms are likely to be repeated practice (and consequent experience), past mistakes, and the pace of experience. Moreover, they considered variation and selection to be two crucial elements of dynamic capability evolution, variation being more important in moderately dynamic markets, selection more relevant in high-velocity markets, given the additional difficulty in choosing which experiences should be generalized.

Zollo and Winter (2002) also stated the role of learning mechanisms in the creation and development of dynamic capabilities. In addition to the more quasi-automatic experience accumulation, they suggested the importance of more deliberate cognitive processes such as knowledge articulation (e.g., through collective discussions or performance evaluation processes) and knowledge codification (e.g., written tools about the implications of existing specific routines). They argued that the more deliberate mechanisms possess stronger effectiveness in developing dynamic capabilities than the quasi-automatic mechanisms when the frequencies of the focal experiences are lower, when the heterogeneity of task experiences is higher, and when action performance causal ambiguity of the task is higher. Zahra et al. (2006) added several other mechanisms for the genesis and evolution of dynamic capabilities, namely, trial and error, improvisation, and imitation. They contended that although learning from experience is more relevant for established firms, trial and error, and improvisation processes are more likely for new ventures.

Heterogeneity Assumptions

Two diverging views can be observed regarding assumptions about firms' degree of heterogeneity in their dynamic capabilities. Most researchers, particularly those who applied a RBV thinking to this framework (e.g., Makadok, 2001), have, like Teece et al. (1997), implicitly or explicitly assumed that dynamic capabilities are essentially firm specific and unique. This assumption is perhaps closely associated with another one, also made in earlier research, regarding the importance of firms' idiosyncratic path-dependent histories of investments and commitments to the creation and development of dynamic capabilities. In contrast, Eisenhardt and Martin (2000) asserted that dynamic capabilities exhibit commonalities across firms (juxtaposing them with so-called "best practices"). They justified the emergence of such commonalities as a result of the existence of multiple, similarly effective ways of performing the task ascribed to the dynamic capability. These considerations are not inconsistent with path-dependent processes and imply only that there are multiple paths to achieve the same dynamic capability. Nonetheless, these authors also noted that there is no such thing as a dynamic capability that is exactly alike across firms because such capabilities, while showing common features, are still idiosyncratic in their details.

Outcomes

Early proposals in this field clearly assumed a direct relationship between firms' dynamic capabilities and their performance (Teece et al., 1997). These authors stated that this framework is intended to explain firm-level success and failure, competitive advantage, and private wealth creation. Along the same lines, Makadok (2001) also conceptualized the dynamic capabilities approach as a causal mechanism (along with RBV) by which firms create economic rents or economic profit, and he also argued that focal firms must, in the first place, possess the resources on which dynamic capabilities can act. Zollo and Winter (2002: 341) also assumed a direct link between dynamic capabilities and superior performance and survival when asserting that, in changing environmental conditions, "both superiority and viability will prove transient for an organization that has no dynamic capabilities." More recently, Teece (2007: 1320) reiterated that "the ambition of the dynamic capabilities framework is nothing less than to explain the sources of enterprise-level competitive advantage over time" and that "dynamic capabilities lies at the core of enterprise success (and failure)."

In contrast, other researchers have shown less confidence in the compulsory and direct link between dynamic capabilities and performance. Eisenhardt and Martin (2000: 1106) contended that "dynamic capabilities are necessary, but not sufficient, conditions for competitive advantage." In their view, long-term competitive advantage does not rely on dynamic capabilities themselves but on the resource configurations created by the dynamic capabilities and on "using dynamic capabilities sooner, more astutely, more fortuitously than the competition" (Eisenhardt & Martin 2000: 1117). Similarly, Zott (2003) maintained that dynamic capabilities are not directly linked to firm performance; instead, dynamic capabilities may influence performance through modifying a firm's bundle of resources or routines. Moreover, although Eisenhardt and Martin argued that firms endowed with dynamic capabilities may surpass rivals lacking those capabilities, Zott argued that firms with identical dynamic capabilities may actually build different bundles of resources and consequently have differentiated performance levels.

Zahra et al. (2006) also proposed that the relationship between dynamic capabilities and performance is rather indirect through the quality of substantive capabilities changed by dynamic capabilities. They also noted that dynamic capabilities may damage rather than improve a firm's performance if dynamic capabilities are used when there is no need for them or when wrong cause-effect assumptions are made. Winter (2003) posited that other types of costs make dynamic capabilities not necessarily advantageous even in terms of internal choice to use them or develop them. According to his argument, not only do dynamic capabilities involve long-term commitments to specialized resources (and without any benefit as long as they are not exercised), but also they are associated with an important opportunity cost, namely, the existence of an alternative way to generate change through "ad hoc problem solving."

Purpose

Several definitions include an explicit purpose for dynamic capabilities. In Teece et al.'s (1997: 516) definition, the purpose of changing competences that matter is "to address rapidly changing environments." For Eisenhardt and Martin (2000), the relevant aim of the resource base change is not only to match but also to create market change, whereas Zollo and Winter's (2002) definition focused on pursuing improved effectiveness. For Zahra et al. (2006), the reconfigurations of interest are those aligned with the desires of the principal decision makers. Finally, Helfat et al.'s (2007) definition requires only that the resource base change be "purposefully" made.

Table 2 presents the summary of the studies on dynamic capabilities that have been published in leading management journals (*Academy of Management Journal*, *Academy of Management Review*, *Administrative Science Quarterly*, *Journal of Management*, *Journal of Management Studies*, *Management Science*, *Organization Science*, and *Strategic Management Journal*) since 1997 and that have mentioned "dynamic capabilities" in their title and/or their abstract. Based on this large set of key articles, I build a critical assessment of dynamic capabilities research.

A Critical Assessment of Dynamic Capabilities Research and Areas for Future Research

The review of the dynamic capabilities literature up to this point shows an impressive body of work intended to advance the approach. However, more than a decade after the publication of Teece et al.'s (1997) article, do we yet have a "theory" of dynamic capabilities? A theory "is a statement of relations among concepts within a set of boundary assumptions and constraints" (Bacharach, 1989: 496). Accordingly, a theory requires the specification of (a) the constructs or variables of interest, (b) congruence, that is, the set of laws of relationship among constructs or variables, (c) the boundaries within which the laws of relationship are expected to operate, and (d) the contingency hypotheses within which the integrity of the system is maintained but in a markedly different condition (Dubin, 1978; Fry & Smith,

(Text continues on p. 270)

Table 2
Summary of Selected Research on Dynamic Capabilities (1997–2008)

Study	Type of Study	Research Focus	Data Source	Sample	Proposals or Findings
Aragón-Correa & Sharma (2003)	Conceptual	Characteristics of DCs; moderators	—	—	How the characteristics of external environments influence proactive environmental strategy and its impact on competitive advantage
Benner & Tushman (2003)	Conceptual	Antecedents	—	—	How process management affects dynamic capability
Blyler & Coff (2003)	Conceptual	Antecedents	—	—	Why social capital is a necessary (though not sufficient) condition for the existence of a dynamic capability
Danneels (2008)	Empirical	Antecedents; characteristics of DCs	Survey; archival	77 U.S. public manufacturing firms, 2000, 2004	Willingness to cannibalize, constructive conflict, tolerance for failure, environmental scanning, and resource slack are antecedents of marketing and R&D DCs
Døving & Gooderham (2008)	Empirical	Intermediate outcomes	Survey	254 Norwegian small firm accountancy practices	Heterogeneity of human capital, internal development routines, and alliances with complementary service providers influence the scope of related diversification
Eisenhardt & Martin (2000)	Conceptual	Antecedents; characteristics of DCs; environmental factors; performance outcomes	—	—	DCs are specific and identified processes that have commonalities across firms, whereas they are idiosyncratic in their details; there are different types of DCs depending on market dynamism; DCs are necessary, but not sufficient conditions for competitive advantage
Galunic & Eisenhardt (2001)	Empirical	Characteristics of DCs	Field	1 <i>Fortune</i> 100 company	DCs consist of a few simple, often competing, rules that enable highly adaptive behavior

	Empirical	Characteristics of DCs	Field	1 newspaper organization	Competing frames of threat and opportunity shape response to discontinuous change
Gilbert (2006)	Empirical	—	—	—	Proposes Bayesian approaches for dynamic capabilities studies
Hahn & Doh (2006)	Methodological	—	—	—	In response to rising oil prices, firms with larger amounts of complementary physical assets and technological knowledge also undertook larger amounts of R&D on coal conversion
Helfat (1997)	Empirical	Antecedents	Archival	26 largest U.S. energy firms, 1976–1981	Alliance learning process is positively related to a firm's overall alliance success
Kale & Singh (2007)	Empirical	Intermediate outcomes	Survey; archival	175 large U.S. firms from industries engaged in alliances	Internally developed units and acquired units serve different roles in the structural reconfiguration
Karim (2006)	Empirical	Antecedents	Archival	250 firms from the U.S. medical industry, 1978–1997	Experience in previous markets increased the probability that a firm would enter a new market
King & Tucci (2002)	Empirical	Antecedents	Archival	174 firms from the disk drive industry, 1976–1995	Firms with a history of increased resource deployments in marketing will achieve superior economic firm-level performance than firms that lack such deployments
Kor & Mahoney (2005)	Empirical	Antecedents	Archival	60 technology-based entrepreneurial firms	Two industry capabilities—mobilizing and transforming capabilities—play a crucial role in assembling and transforming resource bundles into feature films
Lampel & Shamsie (2003)	Empirical	Antecedents; characteristics of DCs	Archival	400 films (U.S. motion picture industry), 1941–1948	

(continued)

Table 2 (continued)

Study	Type of Study	Research Focus	Data Source	Sample	Proposals or Findings
Lavie (2006)	Conceptual	Reconfiguration mechanisms	—	—	Substitution, evolution, and transformation are three mechanisms of capability reconfiguration
Lee, Lee, & Rho (2002)	Simulation	Intermediate outcomes	Computational data	—	When dynamic capabilities are absent, strategic groups are less likely to exist
Makadok (2001)	Conceptual	Characteristics of DCs	—	—	There are two distinct mechanisms for economic rents: resource picking and capability building
Marcus & Anderson (2006)	Empirical	Characteristics of DCs; intermediate outcomes	Survey	108 grocery chains from U.S. retail food industry, 1997	A general dynamic capability affects firms' competence in supply chain management, but not the competence in environmental management
Moliterno & Wiersema (2007)	—	—	—	26 teams from professional baseball, 1969–1983	There is a two-step organizational change capability: decisions about whether to engage in resource divestment and decisions about which resources to divest
Ng (2007)	Conceptual	Intermediate outcomes	—	—	The strength of dynamic capabilities explains unrelated diversification
Oliver & Holzinger (2008)	Conceptual	Characteristics of DCs; intermediate outcomes	—	—	Dynamic political management capabilities influence the effectiveness of political strategies
Pablo, Reay, Dewald, & Casebeer (2007)	Empirical	Characteristics of DCs	Field	One regional health authority in Alberta, Canada	There are three phases in developing a DC: identifying a DC, enabling a DC, and managing the ongoing tensions
Pil & Cohen (2006)	Conceptual	Antecedents	—	—	How modular design practices drive the development of DCs

Rindova & Kotha (2001)	Empirical	Antecedents	Field	Yahoo! and Excite	Continuous morphing is an important mechanism for renewing competitive advantage
Rosenbloom (2000)	Empirical	Characteristics of DCs	Field	NCR Corporation	The role of managers is a central element in DC
Rothaermel & Hess (2007)	Empirical	Antecedents	Archival	81 pharmaceutical firms worldwide, 1980–2001	The antecedents to innovation can be found at the individual, firm, and network levels
Salvato (2003)	Empirical	Characteristics of DCs	Field	2 medium-sized Italian companies	Organizational leaders have a crucial role in purposefully guiding evolutionary processes
Schreyögg & Kliesch-Eberl (2007)	Conceptual	Characteristics of DCs	—	—	In addition to changing the resource configuration, DC requires a separate capability monitoring function
Slater, Olson, & Hult (2006)	Empirical	Characteristics of DCs; performance outcomes	Survey	380 marketing executives from manufacturing and service businesses	The strategy formation capability is a DC; the firms' strategic orientation moderates the relationship between strategy formation capability and performance
Song, Droge, Hanvanich, & Calantone (2005)	Empirical	Performance outcomes	Survey	466 respondents from U.S. joint ventures formed between 1990 and 1997	The effect of the interaction between marketing and technological capabilities on performance is significant only in a highly turbulent environment
Tece (2007)	Conceptual	Antecedents; characteristics of DCs	—	—	DCs can be disaggregated into the capacities to sense and shape opportunities and threats, to seize opportunities, and to maintain competitiveness by reconfiguring a firm's assets

(continued)

Table 2 (continued)

Study	Type of Study	Research Focus	Data Source	Sample	Proposals or Findings
Teece, Pisano, & Shuen (1997)	Conceptual	Antecedents; characteristics of DCs; environmental factors; performance outcomes	—	—	The DCs framework is offered as a new explanation for competitive advantage, namely, to address rapidly changing environments; DCs rest on processes, positions, and paths; DCs are idiosyncratic
Winter (2003)	Conceptual	Characteristics of DCs	—	—	How to distinguish dynamic capabilities from other capabilities; ad hoc problem solving is an alternative to dynamic capabilities
Zahra, Sapienza, & Davidsson (2006)	Conceptual	Antecedents; characteristics of DCs; environmental factors; performance outcomes	—	—	How DCs are related to substantive capabilities and how the relationship between DCs and substantive capabilities is moderated by organizational knowledge and skills
Zollo & Winter (2002)	Conceptual	Characteristics of DCs	—	—	Identifies three main learning mechanisms through which organizations develop DCs
Zott (2003)	Simulation	Performance outcomes	—	—	How the DCs may be linked to differential firm performance; even firms with similar DCs may end up with differential performance
Zúñiga-Vicente & Vicente-Lorente (2006)	Empirical	Performance outcomes	Archival	134 Spanish banks, 1983–1997	Strategic moves under environmental shifts conditions have a positive effect on organizational survival

Note: DC = dynamic capability.

1987). Next, drawing on these conditions, I highlight the important strides made by extant research on dynamic capabilities so far, I show why the approach is not yet a theory, and I offer some suggestions to guide future efforts to achieve such a goal.

The Main Construct

The definition of dynamic capabilities. The main construct of interest in dynamic capabilities approach is of course dynamic capability itself. The importance of an adequate definition of dynamic capabilities for the development of the field could not be greater because working with inappropriate constructs would render propositions based on them simply irrelevant (Bacharach, 1989). Yet the definition of dynamic capabilities is far from being consolidated. On one hand, the construct has been criticized for being vague and elusive (Kraatz & Zajac, 2001), mysterious and confusing (Winter, 2003), abstract and intractable (Danneels, 2008), and obscure and tautological (Williamson, 1999). On the other hand, several proposals and findings have recently been provided, and they deserve full consideration. For instance, Helfat et al. (2007) made a significant attempt to offer a new definition. However, at the same time other researchers (e.g., Menguc & Auh, 2006; Moliterno & Wiersema, 2007; Pablo, Reay, Dewald, & Casebeer, 2007; Schreyögg & Kliesch-Eberl, 2007; Teece, 2007) made new relevant suggestions. So a new conceptualization is required to deal with previous criticisms and to incorporate these new theoretical and empirical developments.

As discussed above, alternative conceptualizations of dynamic capabilities may vary in terms of the nature, specific role, relevant context, heterogeneity assumptions, and purpose of dynamic capabilities. Next, I identify the main challenges associated with each of such dimensions along the existing conceptualizations of the main construct. In terms of its *nature*, dynamic capabilities have been defined as abilities, capacities, processes, and routines. The challenges here are to make the nature of the construct (a) more specific to avoid the accusations of the field being a “big tent” and (b) nondichotomous to allow varying degrees of dynamic capability across firms, which seems more compatible with real-world situations than a “have it or not” approach. In terms of its *specific role*, early research tended to consider dynamic capabilities as concerning changes in resources, capabilities, operating routines, or one combination of these. More recently, other specific roles have been added, such as decision-making abilities or the ability to sense opportunities and threats. The respective challenge seems to be how to integrate both early and more recent proposals about the specific role of dynamic capabilities. In terms of the *relevant context* that should be considered, researchers seem divided as to whether to include all or only some of highly dynamic environments, moderately dynamic environment, or more stable environments. The challenge is whether to include a reference to any kind of “relevant” environment. In terms of the *heterogeneity* of dynamic capabilities, some researchers have stated the importance of assuming them to be idiosyncratic, whereas others have opted to emphasize the existence of significant commonalities among them. The corresponding challenge is to solve the “commonalities paradox,” that is, how to integrate the existence of commonalities in dynamic capabilities across firms and simultaneously acknowledge the possibility of an impact of dynamic capabilities on performance or competitive advantage. Finally, although some researchers have

preferred not to include a *purpose* in their conceptualizations, others have opted to include a *purpose* associated with the role of dynamic capabilities to make the definition less vague. In addition, those in the latter group are divided regarding whether a specific purpose (e.g., “to address rapidly changing environments”) is required or any purpose (e.g., doing something “purposefully”) will do. The inclusion of a purpose seems problematic. On one hand, by equating dynamic capability with the ability “to address rapidly changing environments,” for instance, we would raise the criticism of being tautological because of the confusion between the concept and the main proposition (that firms with dynamic capabilities are better equipped to deal with changing environments and, in consequence, to perform better). On the other hand, by requiring that the role (whatever it is) should be carried out “purposefully,” we would open the door to new controversy, namely, about the difficulties to empirically test it either *ex ante* or *ex post*. So the challenge here is to formulate a concept that avoids the specification of a purpose without attracting the criticisms of being vague or intractable.

In consequence, drawing on past research on dynamic capabilities, I suggest the following definition of dynamic capabilities that accommodates old and new suggestions within the field and also attempts to overcome some of their limitations:

A dynamic capability is the firm’s potential to systematically solve problems, formed by its propensity to sense opportunities and threats, to make timely and market-oriented decisions, and to change its resource base.

According to this definition, dynamic capability is viewed as a multidimensional construct (Edwards, 2001) because it refers to four distinct but related dimensions or facets (i.e., the propensities to sense opportunities and threats, to make timely decisions, to make market-oriented decisions, and to change the firm’s resource base) treated as a single theoretical concept. The word *formed* clearly specifies the relations between the overall construct and the four dimensions, showing that this is an *aggregate* multidimensional construct (Law, Wong, & Mobley, 1998): Instead of a general concept that is manifested by these dimensions (as in the case of a *latent* or *superordinate* construct), this construct is formed by its four dimensions. This means that we are interested here not only in the common variances or covariances shared by all dimensions (as in the case of a latent construct) but also in the variances specific to any of the dimensions and in the covariances shared by some dimensions only (Law et al., 1998). As a consequence, no dimension alone can represent the construct. Instead, as suggested by past research on dynamic capabilities, all dimensions should be taken into consideration: For instance, the propensity to change the resource base is relevant only if there is also a propensity to make the decisions conducive to exploiting the former ability (Pablo et al., 2007), the decision-making propensity is relevant only if the organization also has the propensity to sense opportunities and threats (Gilbert, 2006; Teece, 2007), and a reconfiguration propensity achieves a high effect only when combined with a propensity to make market-oriented decisions (Menguc & Auh, 2006). Furthermore, although the four dimensions represent the specific components of the construct that they collectively form (Edwards, 2001), it is important to note that under this conceptualization (in contrast to the latent case) there is no requirement about the level of correlation among different dimensions, and some dimensions might even be poorly correlated (Law et al.,

1998): For instance, as demonstrated by Rosenbloom (2000), firms with *high* propensity to change the resource configuration might show *low* propensity to make the required decisions in a timely manner (to capitalize on changes previously made in the resource base).

So dynamic capability is a composite formed from four dimensions that were gradually illuminated by past research. The *propensity to change the resource base* is in line with both early and more recent proposals (e.g., Eisenhardt & Martin, 2000; Helfat et al., 2007; Teece et al., 1997) and includes firm's propensity to create, extend, and reconfigure the resource base. The *propensity to sense opportunities and threats* is consistent with previous suggestions by Teece (2007) and the argument that a dynamic capability should incorporate a "capability monitoring" function that continuously scans the capabilities landscape and the environmental changes (Schreyögg & Kliesch-Eberl, 2007) and also with the findings that the managerial framing of opportunities and threats is one key element of dynamic capabilities (Gilbert, 2006). The need to incorporate decision-making propensities in the definition is supported in several studies included in this review. Moliterno and Wiersema (2007) found decision making (about whether to change and which changes of the resource base should be made) to be the essential component in dynamic capability. Rosenbloom's (2000: 1102) study on NCR Corporation showed that although the organization was "able to move rapidly in the new directions," that is, had the resource-changing propensity, "the value of these capabilities would have been dissipated without the action of leaders to enable the transforming changes that made that possible," that is, without the decision-making propensity. Slater, Olson, and Hult (2006) sustained that strategy-making process capability is a key dynamic capability. And Pablo et al. (2007) and Salvato (2003) found the role of decision making by top managers and/or middle managers to be essential to enable resource base change.

According to past studies, two particular decision-making propensities are relevant. On one hand, the timing of the decisions regarding the modification of the resource base plays a fundamental role. Eisenhardt and Martin (2000: 1117) asserted that the potential for long-term competitive advantage lies not only in the ability to change existing resources but also in doing it "sooner," which is of course a capability (Barney, Wright, & Ketchen, 2001). The *propensity to make timely decisions* is also consistent with the early spirit of dynamic capabilities, reflected in the importance assigned by Teece et al. (1997: 521, italics added) to the ability "to quickly accomplish reconfiguration and transformation ahead of competitors." On the other hand, the *propensity to make market-oriented decisions* also seems crucial. As argued by Adner and Helfat (2003), decision making is relevant for dynamic capabilities not only in terms of the *timing* of managerial decisions but also in what concerns the *content* of such decisions. That is, the direction of major decisions matters as much as their timing, and one crucial element of such directional tendency is the extent to which a given firm systematically pays attention to ways that provide superior value to their customers (Priem, 2007). Market orientation, "the business culture that most effectively and efficiently creates superior value for customers" (Narver & Slater, 1990: 20), precisely captures this required directional tendency. Thus, it is not surprising that Menguc and Auh (2006) recently found that market orientation is transformed into a dynamic capability when complemented by reconfigurational capabilities.

The proposed definition has several advantages over earlier definitions relating to the nature of the construct, in terms of either form or substance. First, it is an encompassing but

coherent definition that captures the richness and the essence of a large body of work. By conceptualizing dynamic capability as an aggregate multidimensional construct, I depart from previous unidimensional proposals to incorporate the main dimensions whose importance has been demonstrated in more recent research. Second, by considering the dynamic capability as a “potential to systematically solve problems,” this definition attempts to clarify the nature of the construct, following a previous suggestion of “ad hoc problem solving” and “luck” as the main alternative mechanisms to dynamic capability (Winter, 2003). The adverb *systematically* stresses the importance of viewing dynamic capability as something structured and persistent (Zollo & Winter, 2002). Third, the inclusion of the noun *potential* fulfills two roles. On one hand, it intends to highlight the fact that to generate the intended effects the dynamic capability still needs to be exercised at any moment (Winter, 2003). Thus, dynamic capability is not viewed here in a tautological way, that is, it is not viewed as synonymous with success. (This approach also emphasizes the importance of considering contingency hypotheses, as suggested below.) On the other hand, the word *potential* also intends to avoid framing the concept in a dichotomous way, which would seem at odds with real-world business situations. As there can be high or low potential levels, different firms may have different *levels* of dynamic capability (rather than simply having it or not).

There are also some other important advantages of this definition. First, by considering four distinct but simultaneously necessary components, this definition addresses previous concerns regarding the obscurity and intractability of the construct and facilitates operationalization of the construct in future empirical research. Second, this definition solves the dilemma about including a purpose. The inclusion of a clarified nature (systematic problem solving) and the simultaneous consideration of three other propensities, in addition to the propensity to change the resource base, considerably lessen the possibility of confusion between the dynamic capabilities mechanisms and other alternative explanations, such as luck or ad hoc problem solving (or even other kinds of systematic problem solving formed by *other* dimensions), making the inclusion of a purpose redundant. Third, this definition helps to resolve the commonalities paradox. Once we take into consideration four distinct propensities as the constitutive dimensions of the construct, it is quite possible to conceptually assume commonalities *across firms* in one (or more) of the involved dimensions, whereas the remaining ones are assumed to be idiosyncratic, and, in consequence, to consider the presence of some commonalities across firms compatible with the potential for competitive advantage.

Measurement issues. As explained above, I conceptualized dynamic capability as an aggregate multidimensional construct, that is, a composite formed from its (four) dimensions that might be weakly correlated among themselves. It should be noted, however, that the presence of high correlations among the dimensions is not reason enough to consider dynamic capability as a latent rather than an aggregate construct (Law et al., 1998). The dimensions of an aggregate multidimensional construct differ from formative measures in one important point: the formative measures are observed variables, whereas the dimensions of an aggregate construct are themselves constructs (Edwards, 2001). Thus, researchers need to choose how to operationalize not only the aggregate construct (dynamic capability) but also the “dimensions-related constructs” (e.g., the propensity to change the resource base).

Future research may consider the operationalization of a firm's dynamic capability as a simple sum of its four dimensions (assigning equal weights to each dimension) or as a multiplicative nonlinear function of these dimensions. Otherwise, more complex measurement methods could be used to estimate varying weights for each dimension (Edwards, 2001).

On the other hand, the operationalization of the dimensions-related constructs (i.e., each of the four propensities that combine to produce the dynamic capability aggregate construct), given their nature, might be based on survey data, which can provide direct assessments of the propensities involved. Danneels's (2008) study offers a good example of how to measure "propensity to change the resource base" through survey data. Similar approaches can be employed to measure other dimensions of the aggregate construct. Moreover, future studies should use not only the focal firm's managers as respondents but also third parties (e.g., financial analysts) to mitigate potential bias in the responses from the former group. Alternatively, researchers may opt for objective proxies. King and Tucci (2002), for instance, used experience measures, which are likely to be of interest in future attempts to assess some of the propensities included in the dynamic capability construct. However, because we are dealing with essentially unobservable propensities, it seems advisable to use multiple variables for each dimension-related construct. Finally, researchers can gain valuable insights (that otherwise might not be captured) about the dimensions that form a dynamic capability by using case studies, as shown by, for instance, Galunic and Eisenhardt (2001), Lampel and Shamsie (2003), Pablo et al. (2007), and Rosenbloom (2000).

Congruence

The "congruence" of a theory is defined by the laws of the relationship among its variables of interest (Fry & Smith, 1987). Most of the early proposals within the dynamic capabilities literature have been characterized by insufficient formulation of clear, a priori statements regarding the relationships among key constructs or variables. This situation, followed by the rapid growth of the body of research in this field, led to the existence of an important but less than coherent stock of work moving in different directions. An essential step for transforming the dynamic capabilities framework into a theory is to specify a set of laws of governing the relationship among constituent variables.

The most important relationship in this field is perhaps the one between dynamic capabilities and performance. Three main approaches have been proposed. The first approach stated a direct relationship between firms' dynamic capabilities and their performance or competitive advantage (e.g., Makadok, 2001; Teece et al., 1997; Zollo & Winter, 2002). The second approach proposed that dynamic capabilities do not necessarily lead to superior performance or competitive advantage (e.g., Eisenhardt & Martin, 2000; Helfat et al., 2007) and that performance effects may depend on the characteristics of the resulting new resource configuration or on how managers use their dynamic capabilities (i.e., "sooner" or "more astutely"). The third approach contended that what should be considered is an indirect link between dynamic capabilities and performance (e.g., Zott, 2003).

To guide future research, several comments can be made about these alternative approaches. First, researchers should recognize that the kinds of relationships to be explored

crucially depend on the nature of the definition of dynamic capabilities used in the analysis. That was precisely the reason underlying many of the concerns raised about early conceptualizations of dynamic capabilities. When the definition of the construct embodies an explicit or implicit association with overall performance or effectiveness, there is no point in then proposing a relationship between dynamic capabilities and performance. This is why a clear and adequate definition of the main construct is so important. However, the same reasoning should be applied to other types of definitions and relationships. For instance, if the definition includes a reference to the ability to change the resource base, the relevant relationship to be explored would be dynamic capabilities versus performance or dynamic capabilities versus an intermediate outcome (e.g., corporate strategy change) rather than dynamic capabilities versus resource change.

Second, the assumption regarding the existence of commonalities across firms was sometimes interpreted as a refusal to recognize a necessary link between dynamic capabilities and performance. However, a definition such as the one provided here acknowledges the existence of commonalities across firms while not precluding differential performance, as I argued above.

Third, another approach suggests that dynamic capabilities may lead to performance effects only if the new resource configuration, resulting from the exercise of such capabilities, holds certain characteristics. Accordingly to this view, performance effects should be expected only if the new resource base proves to be valuable, rare, inimitable, and nonsubstitutable (VRIN), that is, if the resulting new resource configuration passes the so-called VRIN criteria (used within the RBV to predict which resources provide sustainable competitive advantage). This approach certainly has its merits and deserves to be used in future research. However, by making the relevance of dynamic capabilities dependent only on whether the new resource base passes the VRIN test, the dynamic capabilities perspective may jeopardize an important part of its unique value. In fact, future efforts (of those researchers interested in the direct link between dynamic capabilities and performance) should also be directed toward proposing and showing under which conditions firms with higher levels of dynamic capability have higher levels of performance. Researchers should use not only accounting performance measures but also market-based measures (because divergent findings have been found in other theoretical frameworks depending on the measures used). Moreover, recently proposed performance measures, such as environmental fitness (Helfat et al., 2007), should also be considered.

Fourth, the approach suggesting an indirect link between dynamic capabilities and performance may hold the most promise. Dynamic capabilities may *actually* change the resource base. The new resource base may influence new product market positions, which in turn may affect performance (Zott, 2003). This approach is fully consistent with early proposals that dynamic capabilities may be a key antecedent of firms' strategic choices, such as entry strategies, entry timing, or diversification (Teece et al., 1997), but, perhaps because of the strong emphasis initially put on the direct link to performance, those suggestions remained largely unexplored. Nevertheless, the literature has already started to address (both conceptually and empirically) the impact of dynamic capabilities on several intermediate outcomes, such as related diversification (e.g., Døving & Gooderham, 2008) and unrelated diversification (Ng, 2007), and also the effect of intermediate outcomes on performance (Zúñiga-Vicente & Vicente-Lorente, 2006). Future research should continue to explore these relationships

between dynamic capabilities and intermediate outcomes, on one hand, and between intermediate outcomes and performance, on the other hand, to better assess which dynamic capabilities and intermediate outcomes deserve more attention. Even more importantly, future work should attempt to simultaneously address these two research goals in the same study.

Boundaries and Contingencies

A theory must specify its particular boundaries. Bounding assumptions are crucial as they determine the limitations in applying the theory (Bacharach, 1989). Although most research within the dynamic capabilities field (like many other approaches in the management literature in their early days) has not paid due attention to bounding assumptions, two ongoing debates regarding boundaries of this perspective bear mentioning: those related to (a) environmental conditions and (b) types of firms. The initial framework advanced by Teece et al. (1997) clearly focused on rapidly changing environments as the relevant context for dynamic capabilities. This was a logical choice given the original intent of the field: to complement the RBV and address its shortcomings. Later, researchers suggested that the concept was useful not only in rapidly changing environments but also in moderately dynamic environments, while accepting that the dynamic capabilities involved could differ across these types of contexts (Eisenhardt & Martin, 2000). Other authors have further suggested dynamic capabilities to be valuable also in more stable environments (e.g., Zahra et al., 2006; Zollo & Winter, 2002). Some of the articles reviewed explicitly refer to the existence of dynamism in the external contexts as a key component of their conceptual proposals (e.g., Aragón-Correa & Sharma, 2003; Lavie, 2006; Oliver & Holzinger, 2008) or of the chosen research settings in their empirical works (e.g., Døving & Gooderham, 2008; Galunic & Eisenhardt, 2001; Gilbert, 2006; Helfat, 1997; Lampel & Shamsie, 2003; Lee et al., 2002; Marcus & Andersen, 2006; Pablo et al., 2007). However, environmental conditions play a lesser role in several other studies (e.g., Blyler & Coff, 2003; Carpenter, Sanders, & Gregersen, 2001; Danneels, 2008; Karim, 2006). More research is required to determine the kinds of environments in which the dynamic capabilities concept is most relevant. Empirical studies should explicitly compare the effects of similar dynamic capabilities in two or more clearly distinct environmental conditions (e.g., different industries or in different periods of time).

A second category of boundary conditions relates to types of firms. Few studies have explicitly investigated which types of firms are more likely to benefit from dynamic capabilities. Teece (2007), for example, stated that dynamic capabilities are particularly relevant to multinational enterprises in global markets. Zollo and Winter (2002), in their discussion of learning mechanisms, conjectured that larger, multidivisional, and more diversified firms have greater probability of benefiting from deliberate learning mechanisms. In addition, dynamic capabilities may also be important for public sector organizations because they face frequent changes in policy and short-term planning horizons determined by election cycles (Pablo et al., 2007) as well as for both new and established firms (Zahra et al., 2006). Previous research has also suggested the relevance of dynamic capabilities to large firms (e.g., Kale & Singh, 2007), medium-sized firms (Salvato, 2003), and small firms (Døving & Gooderham, 2008). It is important that future research attempt to identify not only new types

of firms for which dynamic capabilities are an important concept but also the types of firms for which the concept is less useful. Without such information, the risks of this literature becoming a “big tent” will be higher, reducing its practical value.

More generally, particular attention should be given to the assumptions underlying dynamic capabilities’ theoretical underpinnings, namely, the assumptions about managerial rationality. Perhaps some choices need to be made between a more bounded rationality-oriented approach, in line with evolutionary economics, and a more full rationality-oriented approach, as suggested by the RBV (and as assumed by, e.g., Teece et al., 1997: 527).

In addition to boundary specification, the dynamic capabilities approach needs to determine its most relevant contingency hypotheses. We defined dynamic capability as a firm’s specific *potential* (to solve problems systematically) to stress the fact that, although we should expect that, on average, firms with higher levels of dynamic capability present higher levels of performance, there is no assurance that such a potential is actually realized by each firm and that it actually produces the expected results. Research in this field should draw a significant amount of attention to the internal and external factors that may enable (or inhibit) firms to realize the potential represented by their dynamic capabilities.

So far, only a few studies have included in their analyses the role of contingencies. An example within conceptual research is provided by the study of Aragón-Correa and Sharma (2003), where certain features of the firms’ external environment (uncertainty, complexity, and munificence) moderated the link between dynamic capability and competitive advantage. Within empirical research, an example is offered by Slater et al. (2006), where a firm’s strategic orientation was found to moderate the relationship between elements of a dynamic capability (strategy formation capability) and performance. Greater efforts should be made to incorporate both internal and external contingencies within analyses. Rather than looking for formulas for generalized effectiveness, researchers should recognize that the value of dynamic capabilities is context dependent (Collis, 1994; Winter, 2003).

In sum, I suggest that dynamic capabilities research has advanced considerably since the work of Teece and colleagues in 1997. In their seminal article, Teece et al. (1997: 530) acknowledged that “there could hardly be a more ambitious research agenda in the social sciences today” than the one encapsulated within the dynamic capabilities approach. Subsequently, this literature has generated a remarkably rich but often disconnected body of research, pointing in disparate directions. Borrowing the terminology from evolutionary economics, which serves as a major theoretical underpinning of this perspective, so far we have predominantly observed a *variation* stage in the literature itself, that is, with a proliferation of concepts and relationships. Now is the right time to move toward more *selection-* and *retention-*oriented stages, that is, with a consolidation of the main construct and a capitalization on previous research in a more structured, focused way. The aim of this review is to contribute to this important transition.

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